

CLAIMS

1. Embedded electric lock, of the type comprising a first case body (10) which can be mounted embedded on a jamb (C) of a moving frame (A) of a window and door frame and has a first head wall (12), and a second case body (14) which can be mounted embedded on a corresponding jamb (D) of a fixed frame (B) of the window and door frame and which has a second head wall (14), wherein the first body (10) carries a latchbolt (18) with an end beveled nose (20) and elastic means (22) to cause the latchbolt (18) to return to a closing position of the lock, where the nose (20) protrudes through an opening (24) in the first head wall (12), wherein the second head wall (14) has a selvage (26) for the nose (20) to be engaged therein in the closing position of the window and door frame to lock the moving frame (A) relative to fixed frame (B), and wherein the second body (14) carries an electromechanical release device to controllably disengage the nose (20) from the selvage,

characterized in that the electromechanical release device comprises:

- a loading bolt (28) elastically returned to a position where it protrudes from an opening (30) of the second head wall (14), and suitable to be caused to

retract within the second body (14) and be held at the retracted position under the thrust of the first head wall (12),

- a pusher (34) movable between a retracted
5 position in the second body (14) and a forward position in the selvage (26) to expel the nose (20) from selvage (26) and release the lock,

- elastic means (52) to repulse the pusher (34) to the forward position,

10 - an electromagnet (42) that can be excited to release the lock,

- an escapement system (44) associated to the electromagnet (42), suitable to hold the pusher (34) at the retracted position and to release the pusher (34)
15 to allow it being moved to the forward position when the electromagnet (42) is excited, and

- a kinematic mechanism (46) interconnecting the loading bolt (28) and the escapement system (44) such that, when the loading bolt (28) is caused to retract in
20 the second body (14) and the electromagnet (42) is de-excited, the pusher (34) is held at the retracted position of the escapement system (44), and when the electromagnet (42) is excited, the escapement system (44) releases the pusher (34) and the elastic means (52)
25 are unloaded and move it to the forward position.

2. Electric lock according to claim 1, characterized in that the kinematic mechanism (46) interconnecting the loading bolt (28) and the escapement system (44) comprises:

5 - a rocker idler arm (48) with a fulcrum (50) placed between the loading bolt (28) and the pusher (34), with a spring arm (52) engaged by the loading bolt (28), with an opposite rigid arm (54) tied to the pusher (34) and with an end escapement tooth (58) prolongating
10 the rigid arm (54) towards the electromagnet (42), and

 - an anchor in the form of a swinging finger (60) movable by magnetic attraction towards the electromagnet (42) and elastically returned to a moved away position from the electromagnet (42), the anchor (60) having a
15 stop groove (62) against which the escapement tooth (58) engages when the anchor (60) is at said moved away position, to prevent that the idler arm (48) may move in the direction corresponding to the motion of the pusher (34) towards the forward position through the selva
20 (26),

 - the arrangement being such that when the loading bolt (28) is caused to retract, the idler arm (48), due to the engagement of the escapement tooth (58) thereof with the stop groove (62) of the anchor (60), is held
25 stopped in a position corresponding to the retaining of

the pusher (34) at the retracted position and said spring arm (52) is elastically loaded, whereas when the anchor (60) is attracted by the electromagnet (42) the stop groove (62) disengages from the escapement tooth
5 (58) and the idler arm (48) snaps to bring the pusher (34) to the forward position due to the elastic tension of the spring arm (52) being unloaded.

3. Electric lock according to claim 2, characterized in that the spring arm consists of a
10 spiral spring (52) wound around a pin (50) being the fulcrum of the idler arm (48), having a central portion (74) integral with the pin (50) and having a substantially radial peripheral appendix (76) against which an end of the loading bolt (28) opposite the one
15 corresponding to the second head wall (16) is abutted.

4. Electric lock according to claim 3, characterized in that the pin (50) of the idler arm (48) carries a square bush (78) around which a square central turn (74) of the spiral spring (52) is keyed, and in
20 that the angular position of the square bush (78) relative to the pin (50) can be set to the purpose of adjusting the elastic load of the spring (52).

5. Electric lock according to any of claims 2 to 4, characterized in that the swinging finger being the
25 anchor (60) is elastically returned to the moved away

position from the electromagnet (42) by a spring (64) with a turn portion (66) wound around a pin (68) being the fulcrum of finger (60) and with two branches (70, 72) tending to elastically approach each other, and the
5 first one (70) abutting against the anchor (60) and the second one (72) against a stationary inner portion of second body (14).

6. Electric lock according to any of preceding claims, characterized in that the loading bolt (28)
10 comprises a loading nose (82) linearly sliding between the protruding and retracted positions and a cam (86) rotatable within the loading nose (82), having a beveled face (88) to be engaged by the first head wall (12) and having a side notch (90) suitable to encompass
15 a side edge (30a) of the corresponding opening (30) of second head wall (14) and a finger (92) to be engaged behind the side edge (30a), according to such an arrangement that when the first head wall (12) engages the beveled face (88) of the cam (86) in the closing
20 direction of the moving frame (A), the cam (86) is caused to rotate relative to the loading nose around a fulcrum being defined by the engagement of finger (92) to said side edge (30a), and this rotation of cam (86) is turned, by a force-multiplying effect, to a linear
25 backward movement of the loading nose (82).

7. Electric lock according to any of claims 2 to 6, characterized in that the loading bolt (28) is elastically sent back to the forward position by a compression helix spring (94), independent from the
5 spring arm (52) of the rocker idler arm (48) and interposed between the bolt (28) and a stationary wall of second body (14).